

REMARKS

The present application was filed on July 10, 2003 with claims 1 through 21. Claims 1-21 are presently pending in the above-identified patent application. Claims 10-13 have been withdrawn from consideration in response to a restriction requirement. Applicant acknowledges that while claims 10-13 have been withdrawn from consideration, as noted above, these claims are still pending in the present application.

In the Office Action, the Examiner rejected claims 1-9 under 35 U.S.C. 102(b) as allegedly being anticipated by Silverman [PNAS; April 24, 2001; volume 98, pages 4996-5001] (hereinafter referred to as “Silverman”). In the Office Action, the Examiner also rejected claims 14-21 under 35 U.S.C. §103(a) as allegedly being unpatentable over Silverman in view of Michaud [USPAT 4,017,721].

The comments of the Examiner in forming the objection and rejections are acknowledged and have been carefully considered.

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Section 102(b) rejection

The Examiner rejected claims 1-9 under 35 U.S.C. 102(b) as allegedly being anticipated by Silverman because the article “describes how to calculate moments of tertiary protein structures.” See Office Action, page 4. Also, the Examiner stated on 10 page 4 of the Office Action that “[i]n equation [13] on page 4998 of Silverman, a first order hydrophobicity moment imbalance about the entire protein is written, accounting for hydrophobicity and solvent accessible surface area.”

Applicant respectfully submits that the Silverman reference does not teach or suggest all of the limitations of independent claim 1. In response to the above-noted 15 statement by the Examiner, Applicant asserts that equation [13] of the Silverman reference while incorporating solvent-accessible surface area in a general fashion, the Silverman reference does not teach or suggest all of the limitations of independent claim 1 because the Silverman reference does not teach or suggest the step of enhancing correlation between residue centroid magnitude and residue solvent accessibility within 20 the context of a global linear hydrophobic moment. The discussion of any first order

moment calculation in the Silverman reference ends with equation [13], as illustrated by the subsequent text that reads:

5 Second-order moments provide the capability of spatially profiling the hydrophobicity distribution of amino acid residues. This is the primary focus of the present paper.

10 The remainder of the Silverman reference teaches calculations and techniques relating to zero and second order moments, and not first order moments as claimed in the present invention. Therefore, equation [14], as well as equations [15]-[18], do not teach or suggest the limitations of independent claim 1 because those equations are directed to zero and second order moments. The presently claimed invention, as evidenced by equations [4]-[10] (pages 6-9 of the specification) and page 8 of the specification, discloses the step of enhancing correlation between residue centroid magnitude and 15 residue solvent accessibility within the context of a global linear hydrophobic moment, which is not taught or suggested in the Silverman reference. “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

20 Applicant further submits that by virtue of their dependence on allowable independent claim 1, claims 2-9 recite patentable subject matter in their own right. As such, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-9 under 35 U.S.C. 102(b) as allegedly being anticipated by Silverman.

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Section 103(a) Rejections

30 The Examiner also rejected claims 14-21 under 35 U.S.C. §103(a) as allegedly being unpatentable over Silverman in view of Michaud. Specifically, the Examiner stated that “Silverman does not teach a computer apparatus or programmable media for performing the claimed analysis,” and that “Michaud... uses a digital analysis system to calculate a centroid of a body.” See page 7 of the Office Action.

Applicants respectfully traverse the Examiner's rejection on the grounds that the proposed combination of Silverman and Michaud is improper, and even if the combination were proper, all the limitations of the independent claims are not taught or supported by the combination. Specifically, Michaud does not teach or suggest a system or apparatus for calculating a centroid of residue centroids, as taught in independent claims 14 and 21. Michaud discloses the use of a centroid of the outline of the figure for positioning (see, e.g., Abstract; column 4, lines 29-32). The present invention claims the calculation of "a centroid of the residue centroids." Page 5, line 5, of the specification. Given the fact that Michaud is directed to an electro-optical system, and the present invention is directed to calculating a moment of a tertiary protein structure, Michaud cannot be interpreted as teaching or suggesting a system to calculate a centroid that is equivalent in any respect to that of the present invention.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). As documented above, Silverman does not teach or suggest the claim limitation of enhancing correlation between residue centroid magnitude and residue solvent accessibility, and as illustrated above, Michaud does not teach or suggest a computer apparatus or programmable media for performing the step of calculating a centroid of residue centroids. Therefore, all of the claimed limitations of claims 14 and 21 are not taught or suggested by the prior art, and as a result, Applicant respectfully asserts that independent claims 14 and 21 overcome the rejection as allegedly unpatentable over Silverman in view of Michaud.

Also, Applicant further submits that by virtue of their dependence on allowable independent claim 14, claims 15-20 recite patentable subject matter in their own right. If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Therefore, Applicants respectfully request withdrawal of the rejections.

All of the pending claims, i.e., Claims 1-21, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

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The Examiner's attention to this matter is appreciated.

Respectfully submitted,



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